

Man, Land, & Sea

A publication by Guam Coastal Management Program

May 26, 2023



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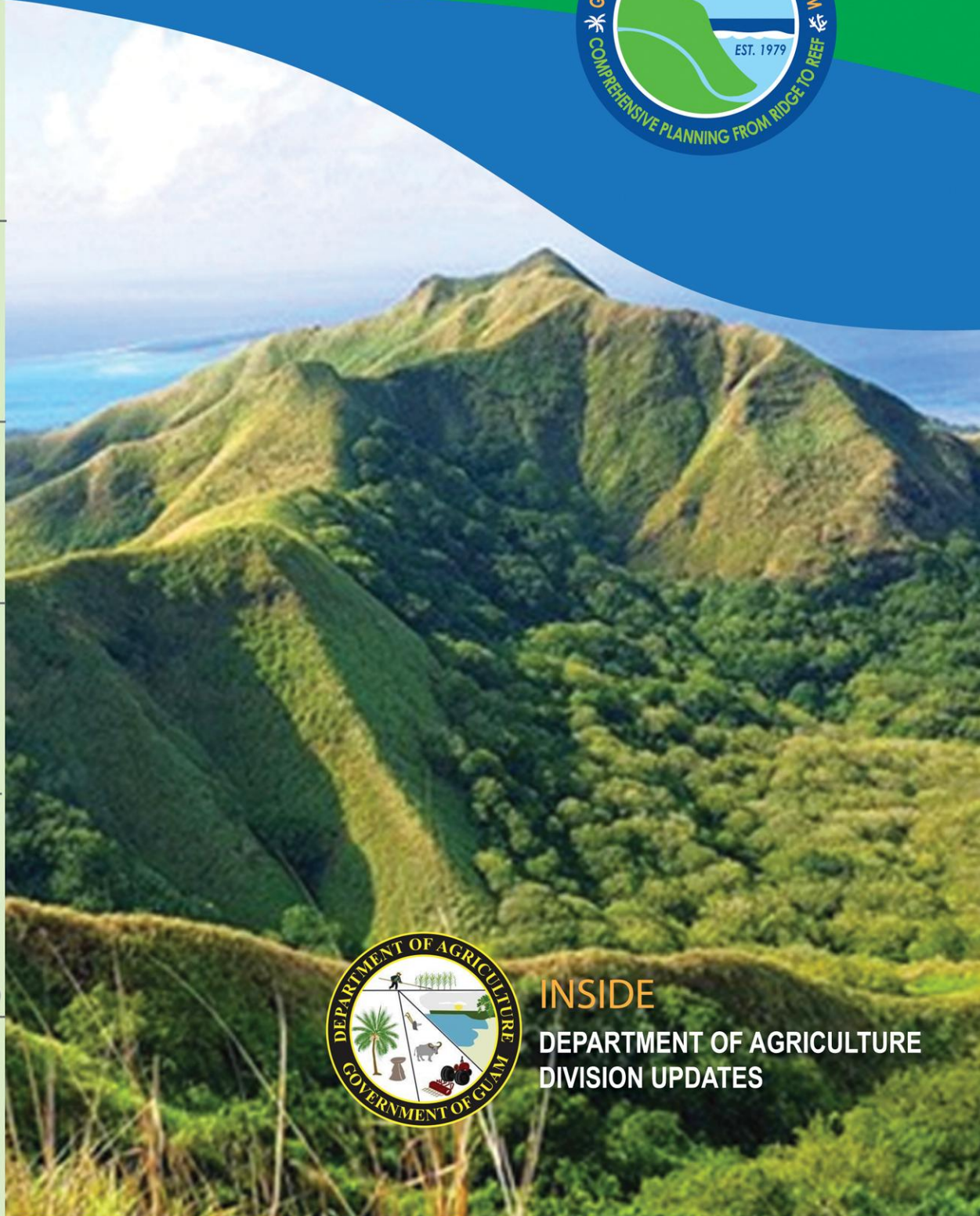
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*Protecting Guam
from Ridge to Reef*



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Forestry & Soil Resources Division



Crafting a Forest Legacy Program for Guam

Forest Legacy is a competitive acquisition program that offers to willing private landowners the option to sell their development rights to the Government of Guam for conservation. Private landowners will have the option to lease and/or sell their conservation easements and lands outright for fair market value. What lands would be prioritized? Lands along cliffsides and rivers, lands with forest cover, and lands over environmental priority sites. This program will add one more tool to our conservation inventory of options for Guam, and most especially, landowners willing to participate. Your Guam Department of Agriculture, Forestry and Soil Resources Division (DOAG-FSRD) started efforts by hosting three community meetings (north, central, and south) to get a sense of what questions and concerns community members might have. Through the development of the program and our community meetings we drafted the Guam Assessment of Need, a required document and first step toward legacy development. Stay tuned - we'll keep you posted.



Keeping our community safe and training our staff is a major priority for the UCF Program as well. In May of 2022, the program hosted a certified arborist training for FSRD, GPA, Parks & Recs, DPW, DOE, National Parks Service, and UOG staff instructed by an internationally certified master arborist, Kevin Eckert. Following the arborist training, four DOAG staff were certified after completing the tree climbing training instructed by Justin Barrios, an internationally certified tree climbing arborist. In January, Justin came back to the island and completed a chainsaw safety/operations tree felling training for 8 DOAG-FSRD staff that were certified for Guam.

Urban and Community Forestry

The Guam Urban & Community Forestry (UCF) Program aims to create resilient and adaptive urban ecosystems to combat negative impacts from development and climate change while benefiting the public. Success requires environment change, advanced planning, leadership, community involvement, volunteer commitment, appropriate plant selection, and proper care.



This program teaches the significance of trees in villages and neighborhoods, improving quality of life in public spaces. Native tree gardens at Untalan Middle School, PC Lujan Elementary, and Ligan Elementary exemplify the program's community successes. These gardens were

planted by students and community volunteers and serve as outdoor classrooms, incorporating interactive signs and benches for rest stops. The gardens expose students to native trees, educating them about their unique characteristics and uses, and nurturing their stewardship of Guam and the Marianas.



For more information on how to get involved in Forest Legacy, planting trees within our community, or fun facts about forest resources please email (forestry@doag.guam.gov), call (671-300-7976/7), or follow us on Instagram and Facebook ([doag.forestry](https://www.facebook.com/doag.forestry)).



Biosecurity Division



Demonstration trap setup on a mango tree in Yigo farm.

PHOTO BY: F. GOFIGAN

"It is vital that we monitor for agricultural pests if we want to continue to practice sustainable agriculture on our island"

-Christopher Rosario, State Entomologist



The Guam Invasive Species Detector Dog Team and their mentor from USDA-APHIS Wildlife Services. Left to right: Tristen Lizama with Maui, Mary "Ally" Worcester with Elvis, Paul Roberts, Louise Baza with Na'i, Garret Certeza with Penny.

INVASIVE HORNET MITIGATION PROGRAM

The Invasive Hornet Mitigation Program is funded by USDA-APHIS to set up traps at Guam's ports of entry which include the Guam International Airport and the Guam Port Authority. This program's objective is to protect the island's growing apiculture industry, preserve the pollination services that bees provide, and reduce the health risks associated with human-hornet encounters.

TROPICAL PEST SURVEY

The Department of Agriculture Biosecurity Division is funded by USDA-APHIS through the Plant Protection Act to conduct a survey of a wide variety of agricultural pests and fungal diseases affecting fruits, vegetables, and bee colonies distributed around Guam's farms. Several of these pests, such as the melon fruit fly and the greater banded hornet, exist in Guam and cause problems for the island's farmers and beekeepers. Through this funding, the Biosecurity Division hired three field technicians to set up multiple traps to monitor the presence of particular agricultural pests at farms. Surveillance and early detection of new agricultural pests and diseases are important to develop Guam's sustainable agriculture. One monitored pest, the Oriental Fruit Fly, once existed on Guam but was successfully eradicated in the early 1960's by USDA and Department of Agriculture. Continued maintenance and expansion of the fruit fly surveillance trap network is critically important in protecting local natural resources and maintaining agricultural biosecurity in Guam. As a major commercial transport hub for Micronesia and Asia, Guam is at risk for entry of new invasive species and poses a threat to the agricultural industry in other islands within Micronesia and Hawaii.

COCONUT RHINOCEROS BEETLE DETECTOR DOG PROGRAM

The Guam Invasive Species Detector Dog Team is a pilot program funded by the US Department of Interior, managed by the Research Corporation of the University of Guam and located at the Guam Department of Agriculture, Biosecurity Division. This partnership between the federal government, local government, and academia is a prime example of how we can work together to battle the spread of invasive species. The primary goal of this program is to prevent the movement of invasive species, such as the coconut rhinoceros beetle, to other Pacific Islands using detector dogs. The handlers paired with these dogs successfully completed a nine-week training course conducted by USDA-APHIS Wildlife Services.



Invasive hornets of concern to Guam
Left to right: Greater banded hornet, *Vespa tropica*;
Northern giant hornet, *Vespa mandarinia*; Yellow-legged hornet, *Vespa velutina*; Lesser banded hornet, *Vespa affinis*;
Yellow-vented hornet, *Vespa analis*.

@doag.biosec 671-475-1426/7



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Law Enforcement Section, Conservation Officers



Conservation Officers in Cooperative Enforcement Program Partnership with NOAA Office of Law Enforcement (OLE) PACIFIC DIVISIONS

Beyond science and regulations, we enforce more than 40 laws designed to protect marine life and their habitat. We enforce domestic laws and international treaty requirements to ensure these global marine resources are available for future generations. In partnership with states and other federal agencies, our special agents and enforcement officers work on all U.S. coasts and inland riverways to ensure compliance with the nation's marine resource laws and take enforcement action when violators disobey the laws.

Our primary jurisdiction is the U.S. Exclusive Economic Zone, which includes waters from 3 to 200 miles off the U.S. coast, including more than 3 million square miles of open-ocean and more than 95,000 miles of coastline. This includes 14 marine sanctuaries and five marine national monuments.



TOKA HOTLINE 864-TOKA

PROGRESS



DOAG Conservation Officers conducting Terrestrial Training for CVCORP Conservation Officers at CATM Range, Andersen AFB and 36th Security Forces Squadron, K-9 Section / Jungle Enforcement Team



CVCORP Conservation Officers conducting Marine Preserve Area (MPA) Enforcement and Public Outreach / Education - Tumon Bay MPA, "Hilton Point Beach Area"



Conservation Officers conducting Joint Training and Operations with U.S. Coast Guard, Coast Guard Station, Apra Harbor, Sector Guam

The Five (5) Marine Preserve Areas (MPA's) Critical Marine Resource Enforcement Area

9 GAR - ANIMAL REGULATIONS DIV. 2 - CONSERVATION, HUNTING & FISHING REGULATIONS CH. 12 - FISHING REGULATIONS 9 Article 2 Marine Preserves

§12203. Designate Marine Preserves. The following areas have been designated as Marine Preserves, as described in Section 15311.0:

- (1) Tumon Bay Location:** Tumon Boundaries: From Two Lovers Point to the northeast tip of Hospital Point.
- (2) Piti Bomb Holes Location:** Piti Boundaries: From the southwest end of Piti Channel mark to Camel Rock and then to Asan Point.
- (3) Sasa Bay Location:** Piti Boundaries: From the west corner of Polaris Point on the finger-like peninsula to the most southerly point on Drydock Island. All the water and shoreline in the bay to the east of this boundary are within a Marine Preserve. The shoreline inclusion within the Marine Preserve shall exceed the ten (10) meter distance in areas where mangroves exist. The boundary in such areas shall extend to the extreme inland edge of the mangroves.
- (4) Achang Reef Flat Location:** Merizo Boundaries: From the southern side of Manell Channel to the northern side of "Ajayan Channel."

- (5) Pati Point Location:** Andersen Air Force Base Boundaries: From the marker (144° 53' 44 E. Longitude, 13° 32' 40' N. Latitude) in front of the pillbox to the west of Tarague channel easterly along the coast to Pati Point, then southerly to Anao Point.

COL 04132010 CH 12. - FISHING REGULATIONS ART. 3 MARINE INVERTEBRATES - 1998 - P. 11

@doag.conservation





Division of Animal Health



It is no secret that Guam has a significant dog and cat overpopulation problem. Fortunately, great progress is being made by the Guam Department of Agriculture's Division of Animal Health. There have been significant improvements made in the last year, with many exciting projects on the horizon.



EXPANSION OF THE ANIMAL CONTROL PROGRAM

Guam's Animal Control team is also essential to management of the population of stray animals, particularly dogs, on Guam. The Animal Control team has expanded its field team from two to six Officers, increasing their capacity to respond quickly to complaints regarding feral, sickly, and aggressive dogs. In addition, the Animal Control team now provides after-hours emergency coverage available for those who require immediate assistance with a severely injured animal. The Guam Territorial Veterinarian oversees the Animal Control Team, and has been restructuring the training program offered to Animal Control Officers in accordance with national standards and the National Animal Care & Control Association (NACA). All 6 of Guam's Animal Control Officers have received their Basic Animal Control Officer Certification, which includes continuing education requirements to maintain their certification and keep their skills current.

RESPONSIBLE PET OWNERSHIP OUT-REACH EVENTS

Equally essential to the management of the dog population is responsible pet ownership. As such, the Animal Health Division has also developed a new program offering monthly outreach events in the community to provide rabies vaccinations, pet licensing, microchipping, and general education through partnerships with the mayor's offices. Rabies vaccinations and pet licenses for dogs and cats are mandated by Guam law and microchipping pets allows for a higher likelihood of a pet being reunited with its owner should it become lost. Animal Health continues to show presence within the community to promote responsible pet ownership and improve animal welfare on Guam.



SPAY AND NEUTER ISLAND PETS (SNIP)

With an emphasis placed on animal sterilization as a sustainable means of humane population management, the Government of Guam allocated \$450,000 annually for 3 years towards the relaunching of Spay Neuter Island Pets (SNIP) and expansion of Guam Animals In Need (GAIN), Guam's only animal shelter. SNIP is a low-cost spay/neuter clinic, making sterilization surgeries affordable and easily accessible to the community. The clinic officially reopened their doors in February 2022, with Guam Department of Agriculture's Territorial Veterinarian Dr. Mariana Turner and GAIN's staff veterinarian Dr. Brenda Smith at the helm. This team of staff and volunteers has worked tirelessly to perform 2,700 sterilization surgeries for pets on Guam in the last year. SNIP currently operates out of GAIN in Yigo 4 days per week. To make their services more accessible to those who cannot easily access Yigo, SNIP also conducts quarterly outreach clinics rotating amongst the various Mayor's offices. Clinics were conducted in the last year at Mongmong-Toto-Maite, Agat, and Yona. The next community SNIP clinic will take place this June in Inalahan.



PLANS FOR THE FUTURE

Territorial Veterinarian Dr. Mariana Turner and Lauren Cabrera, Board President of GAIN, recently represented Guam at the World Organization of Animal Health (WOAH) Performance of Veterinary Services (PVS) Pathway Training in Nadi, Fiji. During this workshop, leaders in animal health from the Pacific Islands gathered to learn about the WOAH PVS evaluation while also collaborating on the challenges uniquely specific to the Pacific Islands. The PVS evaluation provides a comprehensive examination of strengths and weaknesses regarding animal health, as measured against international standards. Ultimately, this evaluation can reveal opportunities for innovation and improvement in animal health services. The Guam Department of Agriculture has now submitted a formal request for PVS evaluation to WOAH.

In the coming year, the Animal Health Division plans to continue building upon the successes of SNIP by offering accessible spay/neuter surgeries on a weekly basis with quarterly outreach clinics. The Division also looks forward to continued growth and training for the Animal Control Officers. Additionally, the Animal Health Division plans to collaborate with 4H for educational programs in conjunction with University of Guam. The Division of Animal Health is proud to continue its efforts to improve animal welfare on Guam and looks forward to further accomplishments in the future.

 @doag.animal.health.gu  671-300-7964/6



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Division of Aquatic & Wildlife Resources



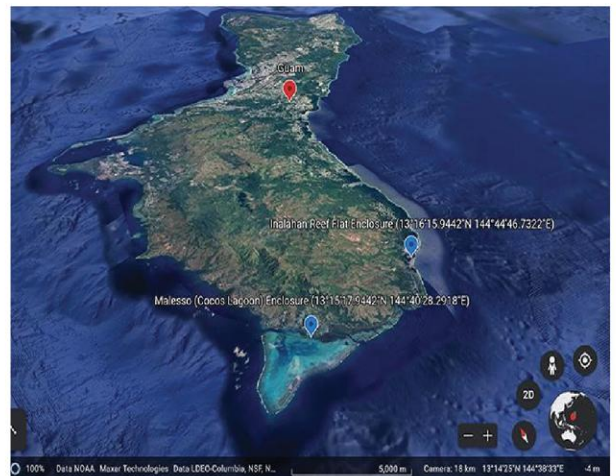
Masso Reservoir Fishing Platform

In April of 2023, after being in disrepair for nearly 2 years due to Covid restrictions, the Masso Reservoir fishing platform located in the village of Piti was successfully repaired. Originally a wetland area created by the U.S. Navy in the late 1940s as a source of potable water, the Masso reservoir now serves as a community area where locals go to enjoy the scenery and a chance to engage in freshwater fishing. The Masso Reservoir was put under the guardianship of the Guam Department of Agriculture's (DOAg) Division of Aquatic & Wildlife Resources (DAWR) in 1978, several decades after the Navy abandoned the area as it was no longer a viable source for drinking water. Since then, DAWR with the collaboration of other DOAg divisions, and the assistance of the community, has transformed the area into a nature park and recreational fishing area. Lead Biologist Brent Tibbatts from DAWR, was able to complete construction of the distressed 200-foot fishing platform in mid April. To celebrate the repaired platform, DOAg hosted an Earth Day Kids Fishing Derby for the public on April 30th. Nearly twenty (20) kids participated and a variety of freshwater species were caught to include a freshwater eel. Funding was provided by the Masso Reservoir Restoration Grant through the Wildlife and Sport Fish Restoration program.



Giant Clam Aquaculture Project

Other accomplishments of the DAWR-Fisheries division is the giant clam aquaculture project that will be set up in the two southern villages, Inalåhan and Malessso. This is a pilot aquaculture program supported by the Pacific States Marine Fisheries Commission (PSMFC), in cooperation and funding from the NOAA Fisheries Office of Aquaculture. Giant clams of the species *Tridacna* will be donated from the Aquaculture Association of Palau, and will make their way to the two designated marine aquaculture sites. Principal investigator Frank C. Roberto, a biologist at DOAg, hopes to revitalize the giant clam population which has experienced a decline due to overharvesting. It is the hope that this project will bring food security to the island along with new job opportunities.



It is also the desire to reconnect Chamoru cultural ties to marine resources that provide a medium for cultural practices and artisanry through shell jewelry making. Part of the project includes the participation from a select group of high school students who will serve as Hima (giant clam) Ambassadors. These Ambassadors will be trained on the project details and will perform analysis of the giant clam farms to help increase public awareness and knowledge.

@doag.dawr 671-735-0281



Plant Nursery

TISSUE CULTURE PROGRAM

Guam farmers are faced with several challenges in producing quality fruits and vegetables for the local markets as a result of increased costs for farm equipment, fuel, seeds, fertilizers, pesticides, supplies and materials, labor shortages, ungulate (feral swine and deer) destruction, and let's not forget about climate change.

Obtaining the seeds to produce the desired marketable vegetables and fruits is, in itself, a challenge and oftentimes taken for granted that the seeds can easily be purchased or available at the usual hardware stores garden section or ordered from a seed catalog. A usual route a farmer or home gardener may choose, but what happens when that certain variety of vegetable sought after is no longer available or not in stock? Is there an alternative source? Let's investigate the following...

There are several ways to propagate plants in order to obtain or retain the desired qualities, for example, from a particular variety of eggplant or tomato for the market or for home use. The types of plant propagation methods are: Direct seeded (hybrid), Air-layering, Grafting, Cuttings, and Tissue Culture.

You may be wondering what is "Tissue Culture?"

Tissue Culture can easily be defined as a cloning process for cells through "Mitosis." The Tissue Culture Program at the Department of Agriculture has evolved many years ago through funding from the United States Department of Agriculture Specialty Crop Block Grant Program (USDA-SCBGP) in the production of root crops, banana, and orchids which yielded several success stories and has provided staff with the experience and expertise in the production of "In-Vitro" grown vegetables and nursery plants. Different varieties of yams, sweet potato, and bananas were grown for the purpose of distributing sterile plant materials free of diseases and insect pests as well as providing a selection of different taro, yam, and banana seedlings.

Tissue cultured plants are not readily available for transplanting into the ground. Newly rooted seedlings in the laboratory are "hardened" in the nursery three to four months before it can be made available for distribution. It is important to note that if tissue cultured plants are introduced in field that was not sanitized, newly introduced saplings or seedlings will be affected and the continuance of or the area becomes a source of vectors and diseases. Pest management is also crucial in preventing the spread of diseases and loss of plant material as a result of infestation.

 @doag.adsguam  671-300-7973



A sweet potato variety propagated through the "In-Vitro" process produces identical "true to parent" plant material that is being prepared for the "hardening" process prior to distribution to the farming community.

Most types of root crops, bananas and a few ornamentals can be reproduced through tissue culture.

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**Organizing
a Beach
Cleanup?
We can help!**

Contact the Guam Coastal
Management Program and
get connected with other
volunteers and supplies.
Call 671-475-9647
or email
gcmp@bsp.guam.gov
for more information.
*limited supplies available per
cleanup event.



AG GU

**A day of fun filled activities
with all divisions from your
Department of Agriculture**

- I'E FISHING DERBY • CLAM FARM DISPLAY • TOUCH POND
- HUNTERS EDUCATION • RHINO BEETLES DISPLAY
- HONEY HARVEST • BEE DISPLAY • GRAFTING & AIR
LAYERING • NATIVE TREELAY RACE • NATIVE TREE
GARDEN • SHOWCASE RARE MOTHER PLANTS
- SEED GIVE AWAY • ANIMAL TRAPS "HOW THEY WORK"
- GAIN PUPPIES FOR ADOPTION • CATCH POLES & GEAR
- AND MORE...

COMING SOON!

